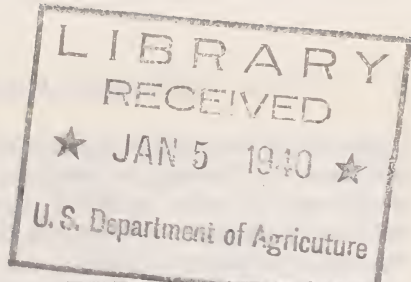


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## REPORT OF THE CHIEF OF THE BUREAU OF HOME ECONOMICS, 1939

UNITED STATES DEPARTMENT OF AGRICULTURE,  
BUREAU OF HOME ECONOMICS,  
*Washington, D. C., September 16, 1939.*

Hon. HENRY A. WALLACE,  
*Secretary of Agriculture.*

DEAR MR. SECRETARY: I submit herewith the report of the Bureau of Home Economics for the fiscal year ended June 30, 1939.

LOUISE STANLEY, *Chief.*

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### TOWARD HIGHER LEVELS OF LIVING

Higher levels of living for the people of the United States—those in cities and villages as well as those on farms—is the ultimate goal of the program of the Department of Agriculture. Provision of a continuous and abundant supply of food and other farm products for all of the Nation's families is one of its major objectives; more stable and adequate incomes and greater security for farm families, another. Work toward these goals may be indirect, as through programs of soil conservation and flood control; or it may be direct, as through the rehabilitation program, and the work of the Consumers' Counsel and the Bureau of Home Economics. However, approached directly or indirectly, a concern for human welfare guides the formulation of research and action programs throughout the Department.

The contribution of the Bureau of Home Economics in this program follows two major lines—furthering the well-being of all people through more effective use of foods and other agricultural products; working toward the solution of special problems of improving the living of farm families. More adequate diets for the Nation's families to help maintain and improve health; better housing, based on knowledge of the dwelling in relation to wholesome family life;

wise use of household equipment; better use of income and increased satisfaction through widespread understanding of household buying problems; greater security for families through wise management of family finances—these are the objectives upon which the Bureau's research program is built.

Because of the close relationship between food-consumption habits and health, agriculture is concerned that its food production program should promote better human nutrition. The Bureau of Home Economics makes an important contribution by studies to determine what people need in terms of essential nutrients (such as proteins, vitamins, and minerals) and how much of each; what foods will provide these essentials in adequate amounts; the dietary habits of people—what foods they commonly use and in what quantities; whether customary diets are adequate from the standpoint of nutritional needs; how people may be helped to improve their habits of food consumption.

The quality and the composition of foods are affected by agricultural production practices and conditions. The Bureau of Home Economics, in cooperation with other bureaus in the Department, investigates the many and varied factors that influence the nutritive properties and the quality of food, in order that producers may better meet consumers' needs and preferences. New uses of food products, better methods of food preservation, and improvements in household practices of cooking foods are also studied in order to help homemakers serve better meals.

To provide clothing and household textiles for the Nation's families, cotton and wool, two of our important agricultural products, are needed. The Bureau is studying ways of increasing consumers' satisfactions from the use of cotton and wool garments and thereby increasing consumer demand. For example, ways of manufacturing cotton hose so that they have greater elasticity and better finish and style have been the object of a special study this year. Other research is designed to help homemakers buy clothing and household textiles best suited to their families' needs, tastes, and pocketbooks. Thus, to help mothers obtain garments that fit children, a study has been made of measurements of boys and girls—as height of waist and girth of hips—to serve as a basis for standards for the sizes of their garments.

Families want durable sheets and blankets that are warm and wear well; hence the Bureau studies the qualities of cotton and wool fibers that make for serviceability of such articles. Construction of fabric as shown by the number of yarns per inch also is investigated since this affects durability. Findings of such research, to be of aid to the household buyer, should be used by producers in establishing minimum standards of quality and market grades for consumer goods, and as a basis for informative labels. In order to provide such buying guides, the Bureau works with other agencies interested in consumers' standards, as the American Standards Association and the American Society for Testing Materials.

Housing needs of families have received far less attention from research workers than have needs for food. The Bureau's research provides valuable information as to the present situation, such as the size of farmhouses, their state of repair, the number of unused rooms,



number of persons per room, and the proportion of families at different income levels having such modern facilities as running water, electric lights, and central heating. What farm homemakers wish in the way of improved living quarters, their suggestions for type of house, arrangement of work centers, storage space, and special features that will meet the demands of the farm business, have also been obtained. However, there is need for research as to how houses may function more adequately; how they may contribute to the development of well-adjusted, happy people; what are the most effective uses of housing space when construction costs are high; what size and shape of rooms are best suited to the many and varied family activities. A study of farm kitchens, now under way, is of this type; its purpose is to determine how much space is needed for the tasks commonly carried on by the farm family in this important room, and the arrangement of work spaces and of equipment that will facilitate the performance of these tasks.

Closely associated with problems of housing are those of household equipment since both affect the efficiency with which homemaking tasks are done, the time and energy spent in doing them, and the family's comfort and well-being. Thus, the character of family meals is affected by the equipment available for their preparation. The homemaker with heavy responsibilities for laundry work, mending, and other types of household production saves strength and health if she has labor-saving devices. In purchasing her household equipment she is in especial need of buying guides if she is to obtain products that will accomplish the work to be done, at an expenditure within the financial means of her family. Research of the Bureau is designed to serve as a basis for formulating standards for household equipment of various sorts as aids to household buyers and for providing instructions as to ways of using equipment more efficiently.

The level of living a family can achieve is limited by its income. However, incomes of farm families are not so inflexible as they may seem; through budgeting, production for family use, and other wise management practices, family funds may be made to yield far greater satisfactions than if hit-or-miss ways of spending are followed. As a basis for sound family plans for management of money and other resources, the Bureau studies family consumption, the kinds and quantities of goods and services used by families, both those purchased and those home-produced. Such studies not only serve as guides to the individual family; they also provide information as to present and potential markets for products of both agriculture and industry and are widely used by producers.

The diets of many of the families of this country, as shown by such consumption studies, are inadequate. While limited funds are responsible, in part, for this situation, poor food choices also are a factor. The Bureau and other agencies in the Department are using facts from these dietary studies in their educational program designed to help families select food more wisely. Improvement of food habits would benefit the Nation's health and would also call for increased use of agricultural products such as vegetables and fruits, milk and other dairy products.

Careful planning for use of land by the individual farm family often enables it to produce a considerable share of its food supply and thus improve its diet. In addition, by saving on grocery bills the family can spend more for other items of living. The Bureau's research has provided the basis of plans for family food production now being used in the education programs of the Extension Service and the Farm Security Administration.

Agricultural policies designed to decrease farm tenancy and to increase ownership of farms by the families of operators also should utilize these studies of family income and consumption if they are to succeed. All too often, in the past, families have been unable to carry out plans for land purchase because they did not provide for meeting both living expenses and payments on the loan. Unless the family can have a decent living while a mortgage is being amortized, the family members are likely to become discouraged and leave the land.

The Bureau's studies of family consumption by income level thus provide information of fundamental importance to many other groups in this Department, as well as to other governmental, social, and business agencies whose policies and programs are concerned with the adequacy of incomes of families, their financial security, use of credit, ability to buy goods and services, and their market preferences, as shown by their buying habits.

Findings from the more important of the current research projects of the different divisions of the Bureau are given below, together with their implications in the broad program of helping all families to raise their levels of living through better planned use of income, more efficient buying, and wiser consumption.

### ECONOMIC STUDIES

Modes of farm-family living are changing along with methods of agricultural production, as technological advances occur. These changes are largely in the direction of urban patterns of living. Yet differences between farm and city groups persist and probably will continue, owing in part to differences in the agricultural and industrial economies. The Bureau has been able to study differences between the kind of living achieved by families of farm operators and that achieved by families in villages and small cities as a part of the study of consumer purchases (a large-scale investigation of consumption patterns of families on farms, in villages, and in cities, carried out cooperatively by this Bureau and other Government agencies as a project of the Work Projects Administration).

### FARM AND CITY INCOMES

In any such comparison differences in the composition and income levels of farm and urban groups must be recognized. Farm families are larger: 42 percent of those in the United States had five or more members in 1930, as compared with 26 percent of the city families, according to the census. More than one-third, 36 percent, of the rural farm population were under 15 years of age; only 26 percent of the urban. Families on farms, as a group, therefore, are carrying heavier responsibilities for the upbringing of the Nation's future



citizens than are those in cities—a fact that affects their ways of living and their uses of income.

The general income level of all families living on farms (operators and laborers) is lower than that of city families. According to estimates of the National Resources Board based largely on the consumer purchases study, half of the nonrelief families living on farms had incomes below \$965 in 1935-36, while the median income of nonrelief families in small cities was \$1,290. Families of farm operators had higher incomes, more nearly equal to those of small-city families than were those of the entire farm group.

The form of the income received by farm and city families differs, too. Incomes of the former are in cash and in kind, while those of the latter are in money, for the most part. Although home-owning urban families have some nonmoney income from occupancy of their houses, such income is considerably less than the income received by farm families from housing, food, fuel, ice, and other products the farm provides. With a smaller proportion of the total in the form of cash, the income of the farm family is much less flexible, as a medium for purchasing goods in the market, than is that of the city family. However, the advantage is not all on one side. The nonmoney income of the farm family tends to safeguard a minimum level of living even in a low-income year. In a period of prices unfavorable for the sale of farm products, the food the family has raised for its own use, the dwelling, and the fuel supply provided by the farm have a use value equal to that of years of higher prices. The city family, which must buy practically all its living, no matter how low its money income, has no such safeguard.

Participation of family members in the farm business tends to develop a strong interest in its success and a willingness to curb expenditures for living in order to purchase land and otherwise build up the enterprise. Farm families, therefore, begin to save at lower income levels than do urban families. At any given income level above \$1,000, relatively more families of a farm than of a city group keep their expenditures for living below total net income, and the average surplus of the farm group is higher. For example, according to the data from the consumer purchases study for the Middle Atlantic and north-central region, a group of farm families in the income class \$1,000-\$1,249 had an average surplus of \$26 over expenditures while the city families at this level were "in the red". When incomes fell within the range \$4,000-\$4,999, the average surplus of the farm families was \$2,182; that of the families in small cities, \$1,183. Spending-saving patterns of the farm and small-city groups in other regions showed similar tendencies, though in farming sections near urban centers differences between the two were less marked.

#### USE OF MODERN CONVENIENCES

With more children to be reared, generally lower income levels, a smaller proportion of net income in the form of money, and a stronger interest in savings, farm families have restricted their purchases of industrial products more than have city families. Environmental factors which make some of these products far more expensive for farm than city groups, have tended to further limit their buying.

Electricity, for example, can be brought to the city home much more cheaply than to the isolated farm. It is not surprising, therefore, that electricity is serving far more urban than farm families—98 percent of the small-city families and 47 percent of the families of farm operators surveyed by the consumer purchases study in the north-central region. The proportion of city families using electricity was similar in the other regions; but the proportion of farm operators' families ranged from 8 percent in Mississippi and Georgia to 95 percent in California. This survey provided a representative sample of the native-white, unbroken, nonrelief families in the communities studied; their incomes were somewhat above those of the population as a whole, since Negroes, foreign-born and other low-income groups were excluded. The farm families discussed in this report are those of operators only. These figures for electricity, therefore, and figures given subsequently present a somewhat more favorable picture than would data for all farm or all urban families.

Improvements in transportation and communication usually are classed among the greatest of the gifts of technology to present-day living. That farm families are by no means reluctant to use these gifts, if they may be had without expenditures far above those made by city families, is shown by figures for automobile ownership. In the north-central region, automobiles were owned by 94 percent of the farm families surveyed, as compared with 70 percent of those in small cities. The farm families practiced economy in car buying, however; almost three-fourths of the automobiles they bought came from the used-car market, while half of those bought by the city group were new.

Other products lessening the isolation of the farm family are widely used when easily available. Thus, in the north-central region the proportion of farm and small-city families having daily newspapers was almost the same—90 and 93 percent. Similar proportions were reported in other farm areas that were only a few hours distant from large cities; but in the cattle-range area, where newspapers would be a day old before they reached many of the farm families, only about half, 53 percent, were subscribers to dailies.

Telephones had been installed by 52 percent of the farm families and by 60 percent of those in the small cities of the north-central region. In the Southeast, only 5 percent of the native-white families of farm operators as compared with 49 percent of the city families had this convenience.

That radios—another source of news—were owned by comparatively fewer farm than city families seems to be related more to lack of electricity than to income differences. While 90 percent or more of the small-city families had radios in the north-central, plains and mountain, and Pacific regions, the proportion of farm families reached this figure only in the California area where more than nine-tenths had electricity. In the Southeast, as few as 31 and 40 percent of the families of white operators in the two areas had radios; in the other regions the proportion tended to be about three-fourths to four-fifths.

A comparison of the housing of farm and urban groups shows the former ahead in some respects, lagging behind in others. Houses operate than others. There may be little correlation between the



north-central region, 93 percent of the farm homes had 6 or more rooms, as compared with 52 percent of the city homes. Average number of rooms per farm dwelling was 8.02; per city dwelling, 5.7. Even though farm families were larger, average number of persons per room was smaller, 0.54 as compared with 0.63 in the small cities. The farm family apparently has more space for living, indoors as well as outdoors.

But farm homes suffer by comparison with those of city families when the so-called modern facilities are considered. Only 24 percent of the farm families in the north-central region had running water; even fewer, 10 percent, running hot and cold water in both kitchen and bathroom. In contrast, 94 and 71 percent, respectively, of the small-city families had these conveniences. However, cities provide water and sewage systems, available to every dwelling with only a comparatively small money outlay, while each farm family must provide these at its own expense.

More farm homes are heated by stoves than by central heating systems; the reverse is true in the small cities. In the north-central region, 40 percent of the farm dwellings and 68 percent of those in small cities were equipped with central furnaces. Without adequate heat, some rooms of the farm home are not usable in winter, and there then may be as much crowding as in the smaller city houses.

The farm home still harbors many of the household-production activities that city families have turned over to industry. Thus, in the north-central region, 3 percent of the farm families had their laundry done out of the house, as compared with 24 percent of those in small cities. Almost all, 99 percent, of the farm homemakers, but only 49 percent of those in cities, canned food for their families. Farm homemakers also share in such farm business activities as grading and selling eggs and keeping the farm records. Because of the many demands on their time, rural women are more in need of labor-saving devices than are city homemakers.

Equipment operated without electricity and of unquestioned service in household production is as widely used by farm as by city families. In the north-central region, 85 percent of the farm homemakers had sewing machines as compared with 72 percent of those in the small cities. Washing machines were owned by 79 percent of the former and 72 percent of the latter. Fewer than one-fifth of the machines in the farm homes were hand-driven, doubtless because mechanical types not demanding electricity were available. Refrigerators of the usual types are not usable in farm homes, far from established ice routes or without electricity or gas. Only 29 percent of the farm families as compared with 81 percent of those in small cities of this region had refrigerators of any sort; 8 percent of the former and 35 percent of the latter families had mechanical refrigerators.

Farm families tend to spend less on clothing than urban families. Differences in expenditures reflect differences in the standards of dress; apparently families in cities place clothing higher in their scale of wants than do those on farms. Thus, in the north-central region, farm families who were in the income class \$1,000-\$1,249 and had two children under 16 years of age spent an average of \$80 for their year's clothing; city families of similar income and compo-

sition, \$105. The desire to keep up appearances seems to be more potent in determining how family funds will be spent in cities than in farm communities. The higher clothing expenditures of the urban group, the greater proportion of purchases of new rather than used automobiles, the greater expenditures for personal care—services at beauty and barber shops and for toilet articles and preparations—give evidence of this difference.

#### PATTERNS OF INCOME USE

Farm families are the best-fed population group in the country, and village families, the poorest. City families fall between the two, in the proportion having adequate food, according to an analysis of dietary records from the consumer purchases study. The difference between diets of farm and small-city families tends to lie in the "protective" foods. Farm families consume an average of about 60 percent more milk, 15 percent more butter, and 25 percent more leafy, green, and yellow vegetables than small-city families. Farm diets, therefore, tend to be richer in protein of high quality, in vitamin A, in iron, and in calcium.

While not all farm families are well fed, many are able to have excellent diets because they produce for home use generous quantities of a large variety of protective foods. Each family should learn what foods and how much of each is required to furnish a fully adequate diet. Popular bulletins of this Bureau and the teaching of the Extension Service and Farm Security Administration help provide such information. After estimating its food requirements, a family should decide what to buy and how much, what to undertake to raise and how much, and what to can and store for out-of-season consumption.

If the diets of all families now inadequately fed were raised to accepted standards of adequacy, the national consumption of the protective foods would be increased as shown below, according to conservative estimates:

	<i>Percent</i>
Milk-----	9 to 28
Butter-----	8 to 21
Tomatoes and citrus fruit-----	10 to 20
Leafy, green, and yellow vegetables-----	78 to 106

The smaller figure indicates increases which could bring grossly inadequate diets to a level of average minimum requirements but without the margin of safety afforded by the higher estimates.

Whether one group of families has a higher level of living than another depends on the yardstick used for measuring the two. Farm and urban families differ with respect to community facilities contributing to family living, with respect to occupation, form of income, and patterns of household production; their ways of spending and their standards as to desirable uses of income differ. Hence the question as to which group lives at the higher level cannot well be answered.

However, findings of this study indicate the sort of measuring stick used by farm families in deciding how income shall be allocated. Whether a person considers these decisions better or worse than those of city families will depend on his ideas of



what is most worth while in life. Farm families apparently consider it wise to use income (money and nonmoney) for broadening horizons through social contacts and news of events; expenditures for automobiles, newspapers, telephones, and radios indicate that these rank high in their scale of preferences. Adequate diets, so important for health and vitality, houses that provide ample space for living, labor-saving devices that conserve strength and provide time for community activities and recreation, also are given preferred places in the budget. Yet present wants and needs are sacrificed to future security (usually achieved through building up the farm business) to a greater extent than by a city group. The lack of community facilities makes the possession of modern housing conveniences more expensive for farm than city families; but this is not evidence of reluctance to adopt the new. Rural electrification, more good roads, and other Government programs are helping to lessen some of the difficulties of the farm families in improving their homes and keeping in touch with the world.

That many families on farms as well as in cities do not reach adequate levels of living is apparent from data concerning the lowest income groups surveyed in communities of all types. The Bureau is working with the Department in its program of giving special help to these families. With the assistance of funds from the Surplus Commodities Corporation, a small-scale study of diets of families on relief has been made in the southwest section of Washington, D. C.

Preliminary figures from this study indicate that the customary diets of the Negro families on relief in the fall and winter of 1938-39 were far below the recommended quantities of protective foods—milk, butter, eggs, tomatoes and citrus fruit, and leafy, green, and yellow vegetables. Averages for small groups of families matched in income and family composition indicate that those receiving surplus foods had more adequate diets than those depending solely on their own resources for food. The consumption of grain products by those receiving surplus foods was 7 percent higher; of butter, 67 percent; and of leafy, green, and yellow vegetables, 24 percent. Consumption of milk in its various forms was almost twice as high, and of dried fruits, about twice. These challenging facts emphasize the need for increased purchasing power on the part of a large proportion of our population, and for more widespread knowledge regarding the kind of food selection that will give excellent returns in nutritive value for food expenditures.

### FOODS AND NUTRITION

The Foods and Nutrition Division has directed its researches toward (1) making more definite our information on the kinds and amounts of essential nutrients required to maintain and promote maximum health and well-being, (2) collection and interpretation of data on food composition to make possible the translation of these requirements into terms of everyday diets, and (3) studies of utilization and influence of methods of production and processing on quality of food.



Nutrition is a dynamic science. The identification of the various food factors essential for good nutrition is still incomplete. Investigations of the nature of these factors have led to studies of the significance and quantitative occurrence of trace elements and new vitamins which are consistently present in natural food materials.

#### NUTRITIVE VALUES AND REQUIREMENTS

A cooperative study with the United States Public Health Service on the physiological effects of continued ingestion of small amounts of vanadium, one of the less common minerals, was reported last year. Further investigations are being made on the distribution of vanadium in different foods and in animal tissues.

Modern methods of processing foods to obtain the keeping qualities essential for distribution do change the food value. For example, the outer layers of many of our ordinary cereal grains are commonly separated in the processing of the cereals for human consumption. Investigations of rice polishings have shown that this portion of the natural rice grain contains valuable nutrients including several newly recognized vitamins. Studies are under way to determine the nutritional significance of these new vitamins, their distribution in other foods, and forms in which they may be introduced into the diet.

A reliable procedure for determining the vitamin A requirements of normal adults having been previously developed, efforts toward defining these requirements in terms of International Units and common food items have been extended. The vitamin A values of plant foods are derived from one or more of four orange-yellow pigments known as vitamin A-active carotenoids, three of which are carotenes. These pigments can be converted into vitamin A in the human body. The vitamin A value of some animal foods is due solely to vitamin A itself and that of other foods such as milk, cream, butter, cheese, and eggs to a mixture of vitamin A and the vitamin A-active carotenoids. Average American diets derive about 60 to 70 percent of their vitamin A value from the vitamin A-active carotenoids and 30 to 40 percent from vitamin A itself. In low-cost diets an even larger proportion of the total vitamin A supply is provided in the form of these important orange-yellow pigments.

The vitamin A requirements as actually determined for a group of adult volunteer subjects were measured in terms of vitamin A, crystalline vitamin A-active carotenoids, and vitamin A-active carotenoids as they occur in spinach and fresh green peas. Taking into account the fact that diets normally derive a part of their vitamin A value from foods of animal source and a part from foods of plant source, it was shown that 3,500 to 4,000 International Units daily was the average minimum requirement. This amount of vitamin A provided daily from the combination of sources just mentioned is sufficient to prevent nutritional night blindness in an adult weighing about 150 pounds. It is recommended, however, that the daily diets of adults carry at least 5,000 to 6,000 units in order to provide a reasonable margin of safety.

Natural foods always contain mixtures of essential nutrients such as protein, minerals, and vitamins. Some of these nutrients are required by the human body in very substantial amounts; others in

very small amounts. Intelligent planning of dietaries, whether for an individual, a family, or an institutional group of people requires not only knowledge of quantitative needs for good nutrition but data on the composition of foods. As such knowledge is, at present, very incomplete even for the well-known nutrients, certain food-composition studies are in progress.

Paralleling the studies of vitamin A requirements, a program of analysis of the vitamin A values of a wide variety of American foods in terms of International Units was begun. When these analyses are completed it will be possible to state the approximate vitamin A requirements in terms of average servings of numerous combinations of our ordinary foods.

A publication summarizing the data obtained in the laboratories of this Bureau on the vitamin B<sub>1</sub> content of about 100 food items produced in this country is now in press.

Data on the proximate composition of foods, obtained from a variety of published and unpublished sources, have also been evaluated, summarized, and prepared for publication. This compilation containing data on over 1,100 food items is now in press.

The data given in these two new publications represent, for the most part, average values for the composition of the foods listed. As such, they are specifically intended for the planning of adequate diets for individuals and groups of individuals and for use in calculating the degree of adequacy of diets of different population groups following the collection of suitable data from dietary surveys.

#### VITAMIN LOSSES IN COOKING

It is important to know the composition of foods, not only as they are produced, but also as they are affected by different methods of food preparation, preservation, and storage. Of all the known food essentials, vitamins B<sub>1</sub> and C seem most likely to be destroyed as a result of ordinary methods of cooking.

A study of the vitamin B<sub>1</sub> losses brought about as a result of cooking various foods by approved methods has just been completed. Foods such as meats and nuts that are often prepared by roasting lose more of their vitamin B<sub>1</sub> value than foods cooked a shorter time or at lower temperatures. The broiling of meats is less destructive of vitamin B<sub>1</sub> value than roasting. The losses in vitamin B<sub>1</sub> value as a result of cooking may in some foods be as great as 50 or 60 percent, but in most of the common vegetables these losses need not exceed 10 or 15 percent. In order to limit such losses to 10 or 15 percent, however, it is essential to avoid overcooking and to limit cooking liquor to a quantity that can be served with the vegetable or used in some other way.

A special study is under way to determine the vitamin C losses in Irish Cobbler and Green Mountain varieties of potatoes as a result of storage and different methods of cooking. Although potatoes do not rank among the richest food sources of vitamin C, the quantities of them used in average American diets make their contribution in vitamin C value of real significance. Potatoes cooked with skins intact retain more of their vitamin C value than do tubers cooked after paring.



## FOOD UTILIZATION

Important as it is to determine human requirements for the different nutrients and to investigate the amount of these nutrients present in foods, it is still necessary to study factors of production, handling, and processing that affect the table quality and palatability of well-known foods. Some of these quality factors are studied in cooperation with other bureaus in the Department; those that are concerned with the principles and methods of home preparation and preservation of food are carried on as individual Bureau projects.

In cooperation with the Agricultural Adjustment Administration, studies were made to discover increased uses for peanuts and peanut products as peanut production has increased faster than the outlet for the crop as a food. Because of their food value, peanuts can make a valuable contribution to the diet, but before they can be used extensively in the home they should be made available at the grocery store shelled and with the brown skins removed. A chemical method for removing the brown skins of peanuts was developed in our laboratories; this method, which can be easily adapted for commercial use, results in a high-quality, stable product with low weight loss and no splitting. Recipes for peanuts previously developed are available to stimulate the home use of shelled, skinned peanuts when they are put on the retail market. The use of peanut meal and peanut flour has also been tested in baked products. Peanut flour could be widely used if a product of good color and flavor, with smooth, fine texture, clean and free from foreign material (of the same high quality as one of the samples tested), could be produced on a commercial scale.

At the request of the Farm Security Administration, recipes for the use of sorgo were developed, as a surplus stock of this sirup was available in certain sections.

Studies were made to determine the influence of different methods of freezing on the quality of frozen vegetables. Both urban and rural homemakers are requesting information on the food value and methods of cooking frozen foods. The rural housewife is interested in freezing as a method of conserving fruits and vegetables for home use.

In cooperation with the Bureau of Plant Industry studies to determine the effect of environment, soil, method of planting, variety, maturity, or storage on the cooking quality of potatoes were continued. A report on specific gravity as an aid in selecting potato varieties with high cooking quality has been summarized for publication.

The extensive, long-time study of factors that affect the palatability of meat is carried on in cooperation with the Bureau of Animal Industry, the Agricultural Marketing Service, and a number of State agricultural experiment stations. In addition to measuring quality and studying palatability factors in a large number of cuts of meat representing different methods of production and processing, the effect of methods, time, and temperature of cooking on shrinkage has been studied. A report of the effect of grade, style of cutting, and method of roasting, on shrinkage and cooking time of rib roasts of beef was published.



Other studies carried on in cooperation with the Bureau of Animal Industry have to do with the effect of production factors and processing on the palatability of poultry flesh and on the cooking quality of eggs. During the year methods were developed for cooking smoked turkey, and recipes were prepared for its use. A popular leaflet on poultry cooking was issued for the homemaker, and a set of wall charts and two film strips on the same subject were prepared for extension workers and others in the teaching field.

Additional comparative tests were made to determine the value of various types of fats for different uses. A study of the shortening value of a number of commercial fats is under way, and the results to date are being summarized for publication.

In view of the need for information by the trade and the consumer on the flavor factor in bread quality, a departmental committee has developed special techniques to determine how the flavor of bread is affected by class of wheat, type of flour, and other factors. The work of several years on this study has been summarized, and recommendations for further work have been formulated.

Scientific studies of all processes of home preservation—canning, pickling, jelly making, and preserving—were continued. Special emphasis was placed on a detailed study of processing meat to attain a safe and palatable product under home canning conditions. To test the effectiveness of different processing times and temperatures, jars of meat have been inoculated with bacteria of known heat resistance and stored under different conditions for varying lengths of time. A preliminary summary of the data from this study has been made, but final analysis of the results cannot be made until additional work is done on the problem.

In addition to studying the best ways of using new foods and new ways of using familiar foods, the Bureau also develops reliable recipes scaled to diets of different cost levels. Special emphasis has been given during the year to commodities declared to be in surplus. Very inexpensive recipes and information on the food value of the surplus commodities have been released to the Federal Surplus Commodities Corporation for distribution to agencies dealing with relief recipients and to the Department's Press Service for release in cities distributing surplus foods through the food-stamp plan.

### TEXTILES AND CLOTHING

The studies of the Textile and Clothing Division are planned to help the consumer in the selection, construction, and care of clothing and household textiles. Under way at present are studies of the chemical and physical properties of various textile fabrics as a basis for the development of standards for fabrics and garments; studies to determine the best quality of fiber and the best fabric construction for a particular use; investigations of factors that tend to shorten the usefulness of a fabric together with a study of methods of controlling the destructive forces; the development of an improved basis for sizing garments; and studies of garment design for definite use and age groups.

Studies of fabrics relating directly back to raw wool and cotton have been undertaken in cooperation with other agencies within the

Department, thus relating consumer requirements for agricultural fibers directly with production plans.

#### CONSUMER BUYING GUIDES

With new developments and keen competition in the textile and clothing fields it is important that the consumer be given as much help as possible in her textile buying problems. This, the Division of Textiles and Clothing has endeavored to do through its publications on buying guides such as those on women's cloth coats, hosiery, dresses, and men's and boys' shirts. Wherever possible these buying guides include specifications for the fabric used in the article of clothing as well as many other points on the selection and construction that will make for longer wear and greater consumer satisfaction.

To aid in judging the serviceability that might be expected from different kinds of materials used in men's and boys' business and work shirts, laboratory tests were made on 35 fabrics commonly used for this purpose. Broadcloth, chambray, madras, printed percales, denim, and covert were included. The information thus obtained has been incorporated in a popular bulletin to help the consumer judge quality when buying this article of clothing.

Specifications for cotton corduroy—the fabric used almost exclusively for boys' winter school and play clothes—were reported to the A-6 subcommittee of the American Society for Testing Materials. The proposed standards based on the laboratory analysis of various qualities of fabrics are definitely a step toward informative labeling even though they are not yet adopted.

To date there has been no information available as to what service may be expected from fabrics which families of low-income levels must buy, yet these consumers need as much if not more help than any other group in their textile-buying problems if their textile dollars are to stretch as far as they must.

At the request of the Farm Security Administration tests were made on several fabrics commonly sold in their cooperative stores. Work on this class of fabrics is to continue, and specifications will be prepared to assist in their purchase.

To encourage the better utilization of cotton for women's, girls', and children's clothing, loan exhibits are in circulation to the State extension services. These illustrate choice of suitable cotton as well as suitable construction in dresses for all occasions, slips, garments for lounging and night wear, and raincoats. The suitable use of both cotton and wool is also shown in the constantly revised exhibits of clothing for the preschool child, still so popular that they are scheduled long in advance. A new design, also calling for cotton, was worked out for the national uniform of the 4-H Club girl, and cooperation given three pattern companies in reproducing it so that it would be available all over the United States.

#### SUITABILITY OF FIBER TO PURPOSE

##### COTTON SHEETS

In order to study the effect of growth upon fiber quality as it relates to the serviceability of the finished material, two selected mill



types of American upland cotton, grown in widely separated locations, ranging from Middling to Strict Middling in grade were made into heavy muslin sheets. Three groups of sheets, two made from each type of cotton alone and one from a mixture of the two cottons, were placed in a local hotel and subjected to regular use.

Judging from the length of service obtained from sheets in this study as compared with that obtained from mediumweight sheets made from cotton of Good Middling, Middling, and Strict Good Ordinary grades in an earlier study, it appears that the sheeting construction as well as the grade of cotton directly affects the wear that sheets will give. The heavier sheets were more closely woven, had a thread count of 68 by 72 as compared with 64 by 64 in the lighter, and had a heavier filling yarn. Several of the heavy muslin sheets in this study, made from Middling cotton, lasted through 350 washings, whereas mediumweight muslin sheets in the previous study made from the same grade of cotton lasted through only 250 washings. These studies further showed that the grade of staple and sheeting construction were more important than differences in growth conditions of the cottons used as all three groups of sheets made from the mill types of cotton withstood practically the same number of launderings.

By taking advantage of these results the manufacturer should be able, with little or no extra cost, to produce a sheet that will give longer wear and greater satisfaction to the consumer.

#### WOOL SUITING

Little definite information is available as to the influence of substitutions of reworked wool and rayon for new wool in suitings. A study to supply factual data on this problem has been started.

The new wool used in the project was produced on experimental animals at the Agricultural Research Center at Beltsville, Md., and was supplied through the cooperation of the Bureau of Animal Industry. It was manufactured according to a standard mill procedure into a 14-ounce suiting of a herringbone pattern. Part of the fabric was then picked apart to make the reworked and stripped reworked wool used in combination with the new wool. Six combinations of these three types of wool were used.

Some of the new wool was combined with a viscose staple rayon of a fineness comparable to that of the wool and of a length suitable for spinning by the woolen system. Spun rayon was introduced because it is an active substitute for wool and at the time the project was started as much as 40 percent of rayon was being blended with wool for men's suitings. The qualities of the fabrics are being measured. The experimental suitings were made into boys' knickers and placed in service in a local institution. Samples are withdrawn periodically for testing in order to determine what changes wear produces in the physical and chemical properties. The study is still in progress and the data obtained have not as yet been tabulated.

#### COTTON HOSIERY

The use of cotton in women's hosiery has declined tremendously during the last 20 years. In 1919 about 72 percent of all women's



hose was made entirely of cotton, whereas in 1937 less than 5 percent was of cotton.

Today silk is cotton's biggest competitor in the women's hosiery field. As late as 1925 the proportion between women's silk hose and all other kinds was negligible, but in 1937 about 86 percent of total production of women's hosiery was made from silk. Prior to 1929 cotton was used extensively for tops, heels, and toes in the silk hose because it wore better and permitted the hose to be sold more cheaply. Since then improvements in silk hose have increased their wearing qualities and have also decreased the amount of cotton used in the reinforcements.

The cotton hose on the market in July 1938 were in large part poorly shaped and styled, made from too-coarse yarns, and badly dyed and finished. In many cases they wore no better than silk. During the past year considerable progress has been made in the Bureau of Home Economics in the development of women's cotton hose that will wear well and at the same time meet the requirements as to appearance. Several constructions of cotton hose using upland cotton were knitted and tested in the laboratory. The most desirable properties, as shown from the tests of the resulting hose, were incorporated in a second lot in which a finer gauge as well as finer yarns were used.

Although plans are under way to spin yarns from known cotton so far only commercial, combed, mercerized, and gassed yarns have been used; however, the size of yarns has been varied. It is interesting to note that the experimental hose have all been knitted on machines normally used for silk, and that the cotton hose have the modern improvements found in the finest silk hose. They are all full-fashioned, some have the latest-type stretch tops, mesh designs, and the last ones made up were knitted on a single-head, single-unit type of machine which has only recently been introduced for silk hose. These hose are 57 gauge (the number of needles or stitches to 1½ inches), the finest gauge cotton hose known to be made.

Only the longer-staple cotton is suitable for spinning the fine yarns used in the hosiery knitted for this study. Although the quantity of this type of staple at present available is more or less limited, if cotton hose from this cotton can be shown to compete, land now utilized for growing short-staple cotton can be diverted to the production of a long-staple fiber with profit to the producer. The type of fiber for the construction of hose that best satisfies the consumer's market preferences is definitely related to the planning phase of cotton production.

Aside from attempts to improve cotton hose through construction and the type of cotton used, various finishing treatments have been applied to improve the elastic properties, water repellency, and snag resistance of the cotton stocking. Of the many treatments tried in the laboratory, octadecyl oxymethyl pyridinium chloride, a chemical that reacts with the cellulose in the cotton, produced the greatest improvement in elasticity and water repellency. After 10 launderings, each much more severe than ordinarily given hose in the home, the treated hose had a 50-percent greater distensibility than the untreated, and there was no appreciable loss in recoverability (the ability of the stocking to retain its shape after repeated distensions).

These treated stockings absorbed much less water than the untreated and at a much slower rate. They took up only about one-sixth to one-eighth as much water as the untreated ones. This difference in water absorption was not materially changed with 10 launderings. Such a treatment should greatly reduce the spots and stains that result from splashing muddy water on stockings during a rain. It should also make spots easier to remove because the soil will remain on the surface instead of penetrating into the fiber.

Preliminary tests indicate that the treated cotton hose snag less readily and have shorter loops pulled out than do the untreated hose. This should mean fewer runs in the stocking. The hose were about 5 percent stronger than they were before treatment, no heavier, and seemed softer and smoother to the touch than the untreated.

#### MICROBIOLOGICAL INVESTIGATIONS

Each year micro-organisms cause considerable loss in the usefulness of many fabrics. Some of these organisms merely discolor the cloth and thus render it unsightly; others actually attack the organic material of which the fabric is composed and reduce the breaking strength; and many both discolor and weaken the fiber.

Often considerably more damage may have occurred in a fabric than is indicated visibly. For example, in a study made in cooperation with the Bureau of Plant Industry concerning the physical and chemical changes produced under controlled conditions in bleached cotton duck by *Chaetomium globosum* (a fungus commonly occurring on outdoor fabrics used for awnings, tarpaulins, shock covers, and the like) and *Spirochaeta cytophaga* (a bacterium which readily decomposes cellulose), the fabrics appeared to be in good condition even after 15 days' exposure to the growth of the micro-organisms. But when the fabrics were tested for breaking strength it was found that the fabric inoculated with *Ch. globosum* had lost 93.1 percent of its original warpwise strength and 96.9 percent of its fillingwise strength. The material exposed to the growth of *S. cytophaga* for 15 days lost 79.1 percent of its warp strength and 77.6 of the filling strength. The only visible change that occurred in the fabric was that the cotton duck inoculated with *Ch. globosum* turned from white to a yellowish white, while that exposed to the growth of *S. cytophaga* became a light tan.

Also it was found that *Ch. globosum* produced greater changes in the weight, thickness, fluidity value, copper-number value, methylene blue absorption, moisture content, and ash content of the fabric and in the staple length of the fibers of the material than did *S. cytophaga*. The difference in the extent and the rapidity of deterioration produced in the cotton duck subjected to these two micro-organisms was probably closely related to their rate of growth. Such marked changes in the fabric might not occur so quickly under natural conditions since the experiment provided a more or less optimum environment. In a study of the mathematical relationships of the data, it was found that so many changes in properties are expressed by similar equations that it seems probable that these changes are interrelated.



## SIZES FOR CHILDREN'S GARMENTS AND PATTERNS

That age alone is a most unreliable indicator of a child's size is clearly demonstrated by the results obtained from the study recently completed by the Textiles and Clothing Division with the cooperation of the Work Projects Administration and 19 State colleges and other educational institutions. This study included body measurements of children between the ages of 4 and 17 years. The data showed that a new system of sizing children's garments and patterns is needed and that a combination of a length and a circumference, or girth, affords a satisfactory indication of size.

From the standpoint both of statistical soundness and practicability, the Bureau of Home Economics, is, therefore, recommending a system of sizes based on a combination of height and girth of hips. This system has been presented to representatives of national organizations of manufacturers and distributors of children's wear, at conferences held under the sponsorship of the American Standards Association (an organization interested in uniformity of specifications for various commodities). These representatives in turn are discussing with their respective organizations the proposed system for sizing children's garments, looking forward to its adoption as a standard of the American Standards Association. Such a standard would be for making the models and manikins used in the sizing of ready-made garments and patterns.

The standard proposed consists of 39 sizes in all for boys—13 regulars, 13 sizes below the regulars, and 13 above; for girls, a total of 36 sizes—12 regulars, 12 below, and 12 above the regular sizes. The sizes are based upon intervals arranged on a height-girth of hips distribution table so as to include the majority of children. The standard proposed represents 89 percent of the boys measured and 86 percent of the girls. Other size intervals have been set up which will be helpful to manufacturers having a demand for garments for children whose body measurements vary greatly from the majority.

The adoption of this standard will lower alteration costs both for the consumer and retailer; will lessen the loss of good will which many retailers suffer because of badly fitted garments; and should tend to reduce "skimp cutting" which some unscrupulous manufacturers have practiced in order to undersell competitors.

## HOUSING AND EQUIPMENT

The widespread interest in improving rural living conditions makes particularly timely two publications issued during the year. One, the Farm Housing Survey, giving a picture of the present situation as to size, need of repair, and facilities of farm dwellings, was based on facts collected in 1934 from more than a half million houses in 308 counties in 46 States. Information from several large-scale inquiries was utilized in the other publication, a summary of what farm families say they want and need in house design to make their homes comfortable and convenient.

Any means of easing the burden of household production is of interest to the farm homemaker, since she spends much of her time in the performance of such tasks. The various types of work carried on in the several work centers of the kitchen have been studied and



suggestions made for arrangements of equipment, work surfaces, and storage spaces that can add to efficiency. Not only is it important to make the best use of whatever space a kitchen affords, but the high costs of building make it essential to know something of the comparative value of different materials for work surfaces, floors, and walls from the standpoint of durability and satisfactory uses.

In addition, information is needed as to the minimum space requirements for effective arrangement of the needed equipment, work surfaces, and storage spaces. In cooperation with the United States Housing Authority these problems are being worked out as they affect kitchens in designs for low-cost city houses. Five floor plans have been prepared for kitchens in housing units of one, two, or three bedrooms, and three kitchens have been set up as a practical demonstration for the various housing agencies to show the workability of the plans and to illustrate not only minimum space requirements, but different arrangements of equipment. As a basis for determining minimum space allotments for farm kitchens of families of low income, a schedule listing equipment owned has been prepared, and it is hoped that surveys can be made by agents of the Farm Security Administration using this schedule.

The trend toward widespread extension of electricity to rural communities is bringing new housing and equipment problems to farm families. For example, the initial wiring of the house and other buildings for light and power should be done with consideration of possible future needs as well as immediate installations. To aid in making such decisions a bulletin on electric lighting for the farmstead has been prepared in cooperation with the Bureau of Agricultural Chemistry and Engineering, and the committee on rural lighting of the Illuminating Engineering Society. Artificial lighting makes it possible to postpone some activities until nightfall. But adequate lighting is of prime importance in conserving eyesight when close-vision tasks or reading are done after daylight is gone; it is an aid to cleanliness; and it helps to prevent accidents.

Families should consider, in making plans for acquiring household equipment, not only the initial expense and unbiased information on the cost of operation and upkeep, but also the comparative utility of different types of equipment. Contributing to answers on some of these questions, a popular bulletin on the selection, operation, and care of home refrigerators is being prepared.

Some study has also been made of electric roasters, inasmuch as many farm families are interested in this piece of equipment as a partial substitute for an electric range. Although still incomplete, this preliminary study indicates that attention should be given in selecting a roaster to its size and shape in relation to the size of utensils required for preparing the family's food. From model to model there are variations in size or shape that might at first glance appear unimportant but that can greatly influence the amount of food that can be prepared at one time. Once the techniques are mastered, satisfactory baked and roasted products and certain types of oven meals can be prepared. Electric roasters make no provision for surface-cooking operations and need to be supplemented by table stoves. Because of differences in construction some are more expensive to operate than others. There may be little correlation between the

watt rating of the roaster and its speed of heating. Some require twice as long to heat as others and twice as much energy to preheat and to maintain constant temperatures.

In cooperation with the Extension Service rural-electrification schools for home demonstration agents have been conducted to enable the agents to assist farm families when electricity is brought into a community, to wire houses adequately, to select equipment which is within their budget and will meet their individual needs, and to use and care for equipment efficiently. Another conference with representatives from six State experiment stations working in the field of household equipment was held for the purpose of continuing the standardization of tests, both technical and practical, for household equipment.

### PUBLICATIONS AND INFORMATION SERVICES

The information services, like the research projects, reflect the ever-increasing demand of American citizens for scientific facts on which to base better planning and management of family living. So in addition to the technical reports giving the complete record of scientific methods and results, popular material is prepared in line with modern trends in illustration and typography. In all 23 new bulletins were printed or sent to press during the year, and numerous articles prepared at the request of scientific journals and trade papers.

#### DEPARTMENT PUBLICATIONS

- Housing requirements of farm families in different regions of the United States. By M. Wilson. Misc. Pub. 322.
- The farm-housing survey. (In cooperation with Bureau of Agricultural Engineering, Extension Service, and Office of the Secretary.) Misc. Pub. 323.
- Factors to be considered in preparing minimum-wage budgets for women. By G. S. Weiss, M. Waite, and L. Stitt; with section on Retail Pricing of a Budget for a Minimum Wage, by Stella Stewart, U. S. Bureau of Labor Statistics. Misc. Pub. 324.
- Outlook for farm family living in 1939. (In cooperation with Bureau of Agricultural Economics). Misc. Pub. 332.
- Consumer purchases study: Family income and expenditures, Pacific region. Part one, Family income. Urban and village series. By D. Monroe, M. S. Weber and H. Hollingsworth. Misc. Pub. 339.
- Hosiery for women: A buying guide. By M. Smith. Misc. Pub. 342.
- Consumer purchases study: Family income and expenditures, Plains and Mountain region. Part one, Family income. Urban and village series. By G. S. Weiss, D. Monroe, and K. Cronister. Misc. Pub. 345.
- Consumer purchases study: Family income and expenditures, Pacific region and Plains and Mountain region. Part one, Family income. Farm series. By D. Monroe, D. S. Martin, M. Perry, and K. Cronister. Misc. Pub. 356. (In press.)
- Children's body measurements for sizing garments and patterns. By R. O'Brien and M. A. Girshick. Misc. Pub. 365.
- Consumer purchases study: Family income and expenditures, Middle Atlantic and North Central region and New England region. Part one, Family income. Urban and village series. By D. Monroe, E. Phelps, D. S. Brady, and I. G. Swisher. Misc. Pub. 370. (In press.)
- Diets of families of employed wage earners and clerical workers in cities. By H. K. Stiebeling and E. F. Philippard. Cir. 507.
- Proximate composition of American food materials. By C. Chatfield and G. Adams. Cir. 549. (In press.)
- Manufacturing and serviceability tests on sheetings made from two selected



- mill types of cotton. By R. E. Rogers, M. B. Hays, and I. T. Wigginton. (In cooperation with Bureau of Agricultural Economics.) Tech. Bull. 645.
- Breaking strength, elongation, and folding endurance of films of starches and gelatin used in textile sizing. By M. S. Furry. Tech. Bull. 674.
- Shrinkage and cooking time of rib roasts of beef of different grades as influenced by style of cutting and method of roasting. By L. M. Alexander and N. G. Clark. Tech. Bull. 676.
- The vitamin B<sub>1</sub> content of foods in terms of crystalline thiamin. By L. E. Booher and E. R. Hartzler. Tech. Bull. 707. (In press.)
- Judging fabric quality. By B. V. Morrison. Farmers' Bull. 1831. (In press.)
- Housecleaning management and methods. By C. W. Moffett. Farmers' Bull. 1834. (In press.)
- Cotton shirts for men and boys. By M. Smith. Farmers' Bull. 1837. (In press.)
- Soybeans for the table. By E. F. Whiteman and E. K. Keyt. Leaf. 166.
- Poultry cooking. Unnumbered pub.
- Well-nourished children. Children's Bureau Folder 14. (In cooperation with Children's Bureau, U. S. Department of Labor.)
- Poultry cooking charts. Set of 8 charts.

## ARTICLES IN OUTSIDE JOURNALS

- A study of the waste in preparation and in cooking of fresh vegetables and the fuel consumed. By E. F. Whiteman and F. B. King. Amer. Dietet. Assoc. Jour. 14: 615-622. Oct. 1938.
- A study of the biophotometer as a means of measuring the vitamin A status of human adults. By L. E. Booher and D. E. Williams. Jour. Nutr. 16: 343-354. Oct. 1938.
- New shrinkage rules for woven cotton goods. By G. R. White. Jour. Home Econ. 30: 636-638. Nov. 1938.
- A realistic approach to teaching clothing expenditures. By D. Brady. Jour. Home Econ. 30: 612-616, illus. Nov. 1938.
- Human conservation and nutrition. By H. K. Stiebeling. Plan Age 4 (10): 279-291. Dec. 1938.
- Ascorbic acid content of commercially canned tomatoes and tomato juice. By O. E. McElroy and H. E. Munsell. Amer. Med. Assoc. Jour. 111: 2138-2139. Dec. 3, 1938.
- Trade practice rules for the silk industry. By M. S. Furry. Jour. Home Econ. 31: 34-36. Jan. 1939.
- Suggested consumer specifications for six classes of household blankets. By M. B. Hays. Rayon Textile Monthly 20 (2): 71-73, illus. Feb. 1939.
- Family outlay for hospital care. By M. C. Klem. Mod. Hosp. 52 (2): 45-47, 51. Feb. 1939.
- What we learn from serviceability studies. By M. B. Hays. Jour. Home Econ. 31: 170-172. Mar. 1939.
- An experimental determination of the minimum vitamin A requirements of normal adults. By L. E. Booher, E. C. Callison, and E. M. Hewston. Jour. Nutr. 17: 317-331, illus. Apr. 1939.
- Consumers have keen ears. By R. Van Deman. Retailing 11 (16, sect. 1): 15. Apr. 17, 1939.
- What's in a fabric name? By L. Stanley. Retailing 11 (16, sect. 1): 13, 21. Apr. 17, 1939.
- Ascorbic acid content of tomatoes as affected by home canning and subsequent storage, and of tomato juice and fresh orange juice as affected by refrigeration. By O. E. McElroy, H. E. Munsell, and M. C. Stienbarger. Jour. Home Econ. 31: 325-330. May 1939.
- Family expenditures for medical and dental care. By M. C. Klem. Amer. Dent. Assoc. Jour. 26: 828-840. May 1939.
- Specifications for blankets. By D. A. Taylor. Jour. Home Econ. 31: 382-383. June 1939.
- A scientific basis for standard sizes for children's garments and patterns. By M. A. Girshick. Amer. Statis. Assoc. Jour. 34: 362-364. June 1939.
- Uncle Sam tries his hand at hosiery designing. By D. A. Taylor and D. H. Young. Underwear and Hosiery Rev. 22 (7): 32-33, illus. July 1939.
- Consumer classification and specifications for cotton broadcloth. By G. White and M. B. Hays. Amer. Dye-stuff Reptr. 28: 410, 431-436, 439, illus. Aug. 7, 1939.
- Consumer specifications for textiles. By M. B. Hays. Jour. Home Econ. 31: 444-446. Sept. 1939.

In addition, the following articles were contributed to the 1939 Yearbook of Agriculture:

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| From tradition to science. By L. Stanley.   | Food composition. By C. Chatfield and G. Adams.   |
| Food functions and the relation of food to health. By L. E. Booher and C. M. Coons.   | Vitamin content of foods. By E. P. Daniel.  |
| Food habits, old and new. By H. K. Stiebeling.  | Present-day diets in the United States. By H. K. Stiebeling and C. M. Coons.  |
| Vitamin needs of man. By L. E. Booher, E. C. Callison, O. L. Kline, S. L. Smith, F. W. Irish, and E. M. Nelson. (In cooperation with the Office of Experiment Stations and the Food and Drug Administration.) | Planning for good nutrition. By H. K. Stiebeling and F. Clark.  |
|   | Better nutrition as a national goal. By H. K. Stiebeling, M. Marioletti, F. V. Waugh, and J. P. Cavin. (In cooperation with the Agricultural Adjustment Administration and the Bureau of Agricultural Economics.) |

Much of the material prepared for press, radio, and exhibit use shows the close cooperation of the Bureau of Home Economics with other branches of the Department dealing with production and marketing. For instance, at the request of the Federal Surplus Commodities Corporation, radio broadcasts are given and news releases sent to the press calling attention to the nutritive values and ways of using the foods officially declared in surplus. Consumers are thus better able to take advantage of food bargains to plan balanced meals, and crop distribution is facilitated.

Outstanding also as information equally helpful to producer and consumer was the exhibit on poultry cooking prepared for the World's Poultry Congress held in Cleveland, Ohio, July 28 to August 10, 1939. A series of photomurals, film strips, and wax models showed the modern theory of cookery applied to all types of domestic poultry. To reach an even wider audience and be available for continuous use in schools and extension groups, a series of eight Poultry Cooking Charts (each 20 by 30 inches in size) were printed and placed on sale by the Superintendent of Documents. And for those who wish pictorial material in still another form, two film strips on poultry cooking were prepared in cooperation with the Extension Service.

Other exhibits include the display of publications at the annual meetings of the American Home Economics Association and the American Library Association; a booth depicting the research on vitamin A requirements of adults, arranged for the convention of the American Medical Association; and panels of new bulletins and illustrative material circulated to 45 State and regional conferences of home economics workers. Material was also furnished for Federal exhibits at both the New York World's Fair and the San Francisco Golden Gate Exposition.





